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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,233	03/10/2004	John S. Crnko	96600/18UTL	3559

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EXAMINER

HOPKINS, ROBERT A

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/798,233

Applicant(s)

CRNKO ET AL.

Examiner

Robert A. Hopkins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1855 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-25 is/are allowed.
- 6) ☒ Claim(s) 26-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 26-33 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a method for improving separation efficiencies comprising the step of providing a gas chromatography apparatus comprising a microwave oven adapted to heat the GC column and including a GC column having a continuous phase material(105) forming a wall surrounding an interior space for containing a chromatography sample and a microwave absorbing material contained in the continuous phase material(column 13 lines 39-40), a microwave source, a temperature sensor , and a microwave source controller adapted to control a microwave power to the microwave oven by the microwave source and to control a power efficiency of the microwave source, a coolant source, and a coolant source controller adapted to control a flow rate of the coolant, and irradiating the GC column with microwave energy at a controlled irradiation rate sufficient to produce a positive temperature ramp, where a lower start temperature is raised to a higher stop temperature, and supplying a coolant to the GC column at controlled rate sufficient to produce a negative temperature ramp, where a higher start temperature is lowered to a lower stop temperature(figure

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17), where the negative temperature ramp improves the separation of lower boiling components from higher boiling components or improves the separation of components having boiling points within a narrow temperature range. Rounbehler et al further teaches holding the GC column at each higher stop temperature for a positive ramp hold time and at each lower stop temperature for a negative ramp hold time by supplying a coolant to the GC column and irradiating the GC column with microwave energy under temperature maintaining conditions.

Claims 34-40 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a method for improving separation efficiencies comprising the step of providing a gas chromatography apparatus comprising a microwave oven adapted to heat the GC column and including a GC column having a continuous phase material(105) forming a wall surrounding an interior space for containing a chromatography sample and a microwave absorbing material contained in the continuous phase material(column 13 lines 39-40), a microwave source, a temperature sensor , and a microwave source controller adapted to control a microwave power to the microwave oven by the microwave source and to control a power efficiency of the microwave source, a coolant source, and a coolant source controller adapted to control a flow rate of the coolant, and irradiating the GC column with microwave energy at a controlled irradiation rate sufficient to produce a positive temperature ramp, where a lower start temperature is raised to a higher stop temperature, holding the GC column at a higher stop temperature for positive ramp hold time by supplying a coolant to the

GC column and irradiating the GC column with microwave energy under temperature maintaining conditions, supplying the coolant to the GC column at a controlled flow rate sufficient to produce a negative temperature ramp, where a higher start temperature is lowered to a lower stop temperature, holding the GC column at a lower stop temperature for a negative ramp hold time by supplying a coolant to the GC column and irradiating the GC column with microwave energy under temperature maintaining conditions, where the negative temperature ramp and negative ramp hold time improves the separation of lower boiling components from higher boiling components or improves the separation of components having boiling points within a narrow temperature range.

Claims 41-48 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a GC separation protocol method for a microwave heated GC apparatus comprising the steps of providing a gas chromatography apparatus comprising. a microwave oven adapted to heat the GC column and including a GC column having a continuous phase material(105) forming a wall surrounding an interior space for containing a chromatography sample and a microwave absorbing material contained in the continuous phase material(column 13 lines 39-40), a microwave source, a temperature sensor , and a microwave source controller adapted to control a microwave power to the microwave oven by the microwave source and to control a power efficiency of the microwave source, a coolant source, and a coolant source controller adapted to control a flow rate of the coolant, and applying at least one positive temperature ramp to the GC column , and applying at least one negative

temperature ramp to the GC column , where the negative temperature ramp and negative ramp hold time improve the separation of lower boiling components from higher boiling components or improves the separation of components having boiling points within a narrow temperature range.

Claims 49-55 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rounbehler et al(5808178).

Rounbehler et al teaches a GC separation protocol method for a microwave heated GC apparatus comprising the steps of providing a gas chromatography apparatus comprising a microwave oven adapted to heat the GC column and including a GC column having a continuous phase material(105) forming a wall surrounding an interior space for containing a chromatography sample and a microwave absorbing material contained in the continuous phase material(column 13 lines 39-40), a microwave source, a temperature sensor , and a microwave source controller adapted to control a microwave power to the microwave oven by the microwave source and to control a power efficiency of the microwave source, a coolant source, and a coolant source controller adapted to control a flow rate of the coolant, and applying at least one positive temperature ramp to the GC column , and applying at least one negative temperature ramp to the GC column, where the positive temperature ramps are the same or different, applying one or a plurality of negative temperature ramps, where the negative temperature ramps are the same or different, holding a resulting GC column temperature after each positive or negative temperature ramp for one or a plurality of hold times by supplying a sufficient coolant flow and sufficient microwave energy under

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temperature maintaining conditions, where the hold times are the same or different, and where the negative temperature ramps and hold times improve the separation of lower boiling components from higher boiling components or improves the separation of components having boiling points within a narrow temperature range.

Allowable Subject Matter

Claims 18-25 are allowed.

Claim 18 recites "a method for improving separation efficiencies comprising the step of : providing a gas chromatography (GC) apparatus comprising ... performing one or a second plurality of negative temperature ramps, where each negative temperature ramp comprises lowering a current temperature of the GC column from a higher start temperature or a second plurality of higher start temperatures to a lower stop temperature or a second plurality of lower stop temperatures at a negative controlled rate or at a second plurality of controlled rates". Rounbehler et al teaches a negative temperature ramp in figure 17, however the temperature ramp is an immediate drop instead of at a controlled rate. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide lowering a current temperature of the GC column from a higher start temperature or a second plurality of higher start temperatures to a lower stop temperature or a second plurality of lower stop temperatures at a negative controlled rate or at a second plurality of controlled rates because Rounbehler et al does not suggest such a modification. Claims 19-25 depend on claim 18 and hence are also allowed.

Response to Arguments

Applicant's arguments filed 10-10-06 have been fully considered but they are not persuasive.

Applicant argues with respect to claims 26,34,41, and 49 that Rounbehler et al does not disclose a GC column comprising a continuous phase material forming a wall surrounding an interior space for containing a chromatography sample and a microwave absorbing material contained in the continuous phase material. Examiner respectfully submits Rounbehler et al clearly teaches a continuous phase material forming a wall(105 in figure 1) surrounding an interior space for containing a chromatography sample and a microwave absorbing material contained in the continuous phase material(column 13 lines 38-45). Therefore , Examiner respectfully submits Rounbehler et al clearly anticipates claims 26,34,41, and 49 which includes the above recited limitations.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any


extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm, every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rah
October 23, 2006


ROBERT HOPKINS
PRIMARY EXAMINER

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